STATE OF CALIFORNIA
Department of General Services - Office of Procurement
PURCHASE ORDER

Form GSOP 1-PIN (04/98)

Purchase Order No.	Rev.	Date
62206		6/30/2008

Supplier No.	Solicitation No.	Delivery Date	FOB Point	Invoice Terms
803267	57098	210 Days ARO	Destination	

POINTER ENTERPRISES, INC.
9121 ATLANTA AVENUE,#410
HUNTINGTONBEACH, CA 92646
Attn: TIMOTHY POINTER

Phone: 714-536-5008

Ship To: AIR RESOURCES BOARD
9528 TELSTAR AVE
EL MONTE CA 91731
Attn: DENNIS CALGARO

Charge To: AIR RESOURCES BOARD
PO BOX 1436
SACRAMENTO, CA 95812-1436
ACCOUNTING (916) 327-0631

Agency Billing	Agency Purchase Estimate	Purchase Estimate	Revision
64900	PE079000	67164	0

Agency Contact	Phone	Date Received
LYNN PILE	916-327-5754	

Item No.	Quantity	Unit	Commodity Code	Description	Unit Price	Extension

THE GENERAL PROVISIONS FOR NON-IT COMMODITIES ARE HEREBY INCORPORATED BY REFERENCE. THESE GENERAL PROVISIONS CAN BE OBTAINED BY PHONING (916) 375-4400 OR BY ACCESSING OUR WEBSITE AT:
www.documents.dgs.ca.gov/pd/modellang/GPnonIT0407.pdf

THE FOLLOWING INFORMATION IS PROVIDED FOR AGENCY USE ONLY:
PRIME CONTRACTOR: SB
FISCAL YEAR: 2007/2008

1	1	EA	6635-356-0106-0	AIR SAMPLING EQUIPMENT (AS DESCRIBED)	569,250.0000	569,250.00

Full Flow Particulate Sampling System, Modular Design, Consisting of an exhaust transfer component a dilution air filter system, a dilution tunnel with sample zone for particulates, three (3) heated particulate sampler units with secondary dilution, control system, and VTS interface in accordance with attached bid specification #6635-0080, dated May 22, 2008, (7 pages).

Brand: AVL SMART SAMPLER
Model: SPC 472

Total Value: 569,250.00

F.O.B. DESTINATION REQUIREMENT

For the purpose of this order only F.O.B. Destination will be accepted.

ATTACHMENTS
THE FOLLOWING ATTACHED DOCUMENTS ARE PART OF THIS SOLICITATION:
1. SPECIFICATION #6635-0080 SEVEN (7) PAGES DATED, MAY 22,2008.
2. MISCELLANEOUS REQUIREMENTS TWO (2) PAGES

AWARD DATE

This purchase order is being awarded on September 25, 2008 pursuant to Government Code Section 13332.17. Any encumbrances made pursuant to this purchase order shall be construed to have been made on the last day of the preceding fiscal year.

Sales and/or use tax to be extra unless noted above

Buyer	Phone	BOC Number
LONNIE WILLIAMS	916-375-4586	

STATE OF CALIFORNIA

Department of General Services - Office of Procurement

PURCHASE ORDER CONTINUATION

Form GSOP 2-PIN (04/98)

Purchase Order No.	*Revision*	*Date*	*Supplier No.*	*Supplier Name*
62206		6/30/2008	803267	POINTER ENTERPRISES, INC.

Item No.	*Quantity*	*Unit*	*Commodity Code*	*Description*	*Unit Price*	*Extension*

AWARD DATE

This Purchase order has been registered into the state contact and procurement registration system (https://www.scprs.dgs.ca.gov/). The registration number is 38900908334469.

CHANGE ORDERS

This Purchase Order may be amended, modified, or terminated at any time by mutual agreement of the parties in writing. Change orders amending, modifying or terminating the Purchase Order, including any modifications of the compensation payable may be issued only by the State Procurement Officer. All such change orders shall be in writing and issued only upon written concurrence of the supplier. Termination, as that term is used in this section, does not include termination for default of the supplier.

MISCELLANEOUS REQUIREMENT

Bid Submittal:

Each bidder shall submit, as part of the bid, sketches of the proposed FFP system or photographs of systems fabricated and sold by the company on a write-able compact disc. If the bidder has not previously supplied equipment to the state, the names of not less than three (3) users of said equipment shall be provided as references.

Each bidder shall submit documents (product catalog, product specification, test results, etc.) that demonstrate that the offered system is compliant to all the bid requirements.

Vendor Qualification:

The bidder must be able to demonstrate a history and expertise in the design and fabrication of FFP system, and/or similar equipment. The state reserves the right to require the bidder to demonstrate the ability to meet these requirements on its identical existing equipment.

Preliminary Design

Prior to fabrication of the FFP system, the contractor shall submit working drawings for approval to Thu Vo, Manager, Surveillance Testing Section, Mobile Source Operations Division in El Monte, California.

Documentation and Drawings

The Contractor shall supply two (2) electronic copies of the flow schematic and two (2) electronic copies of the wiring schematic diagram on a compact disc. The drawings may be in ".dc", ".dwg", ".dxf" format or in an image format readable by Microsoft Powerpoint or Visio. All valves, meters, controllers, switches, relays, etc. shall be identified and numbered on these drawings. These reference numbers shall also be placed on or adjacent to the actual component in the FFP.

In addition, at least four (4) copies of complete instruction manuals and four (4) copies of service manuals specific to this FFP system shall be provided. These manuals can be submitted in electronic format in Microsoft Word or Adobe Acrobat files and shall completely address the following:

1. Performance specification, installation, operation, and preventive maintenance of the equipment.

2. Service parts lists, identifying major components by manufacturer's part number and/or vendor's part number.

3. Service manuals for individual major components.

4. Wiring diagrams for the complete console and components.

Installation, Start-Up and Training

The contractor shall notify the state representative not less than ten working days before the projected start of installation. The state, however, reserves the right to defer the projected start date by no more than 90 working days if required by its testing schedule.

To minimize downtime for the test cell, on-site installation shall not exceed 90 days from the day the test cell is taken out of service for installation of the new FFP system. Failure to complete installation and acceptance testing within this 90-day period may result in cancellation of the contract.

The contractor shall make all necessary connections from the system to the existing facility equipment. The contractor shall be responsible for any facility modifications that may be required for installation and operation of the new equipment. If the offered system requires any modification to the facility, the bidder shall complete and return the attached contactor license document.

The contractor shall also be responsible for providing training at the delivery site for the proper operation of the system for up to eight (8) staff.

Warranty and Service

The contractor shall replace or repair any part, system or assembly, which the state determines to be defective for a period of one year following the state's acceptance testing. If the state deems that service is required, on-site service shall be available within twenty-four (24) hours of notification of the problem. The contractor shall also maintain an inventory of replacement parts and provide service and repairs at fair market rates for a period of not less than five (5) years.

Final Acceptance

The FFP system must be tested to show that it meets the performance and operational requirements at the manufacturer's facility. The state reserves the right to observe this testing. Documentation of the testing and results must be submitted to the state for review and approval prior to shipping the system to the state. On site acceptance testing shall be performed by the contractor including verification that the FFP system interfaces properly with the VTS.

When the contractor states that the system is installed, commissioned, and ready for operation, the state staff will check the system for compliance to the bid specifications. The equipment will not be considered "accepted" until these tests have been completed successfully and all documents have been received. Payment may be withheld until all required documentation is received from the contractor. Procedures for acceptance testing are to be mutually agreed upon in writing prior to acceptance testing.

1. **Scope**

The requirements herein describe for a Full Flow Particulate Sampling System (FFP System) to be used to test gasoline powered vehicles. The FFP System shall be installed at the Air Resources Board's (ARB) Haagen-Smith Laboratory (HSL), Cell #3 in El Monte, California, to provide particulate sampling capability. The FFP System shall be connected to an existing Horiba Constant Volume Sampling System (CVS) with nominal flow rates between 150 and 1000 SCFM. The CVS uses critical flow venturis to control total diluted exhaust flow.

2. **Applicable Specifications**

Specifications and standards referenced in this document in effect on the opening of the Invitation for Bid, form a part of this specification where referenced.

3.1 **General Specifications**

A. The FFP System shall be modular in design consisting of: 1) an exhaust transfer component, 2) a dilution air filter system, 3) a dilution tunnel with sample zone for particulates, 4) three (3) heated particulate sampler units with secondary dilution, 5) Control System, and 6) VTS Interface.

B. The dilution tunnel shall be connected to the existing Horiba CVS. The existing CVS will still provide proportional unheated gaseous samples. The contractor shall be responsible for any modifications to the existing CVS to provide proportional particulate sampling.

C. The dilution tunnel shall provide complete mixing of exhaust gas and dilution air with no stratification at flow rates between 200 and 1000 Standard Cubic Feet per Minute (SCFM) of the existing CVS. A mixing orifice shall be used to ensure proper mixing. The exhaust gas and air mixture must be homogeneous throughout the sample zone.

D. The contractor shall be responsible for ensuring that the supplied system is leak tested and the results are fully documented and supplied upon request. The acceptable criteria for leak check is 2.5 kPa decay over 30 seconds starting at -45 kPa absolute pressure.

E. Flow controls for sampling functions shall be started and stopped by stainless steel body solenoids with a seat that is compatible with petroleum products and alcohols.

F. No components in contact with the exhaust gas/air mixture shall be constructed of a material, or in such a way, as to alter the pollutant concentrations of species present in that mixture.

G. The system shall be suitable for operation at ambient temperatures between 68 °F and 86 °F.

H. The system shall comply with the requirements set forth in Chapter 40, Part 86, Section 86.1310-2007 of the "Code of Federal Regulations", latest revision.

I. The design and fabrication of the FFP System shall be consistent with good engineering practice, and shall be of good laboratory quality and workmanship. Wiring and plumbing shall be routed and secured in an orderly and logical fashion, to facilitate maintenance and repairs.

J. All fittings and connectors shall be of good quality and, with the exception of cable ties and lacing, shall be reusable. All tubing, valves, and pump heads shall be made of 316 stainless steel, Teflon®, or other material impervious to the corrosive nature of exhaust gases and shall not retain pollutants on the internal walls. All stainless steel tubing will have smooth radius bends so that flow will not be restricted by the bend.

3.2 Exhaust Transfer

A. The transfer of exhaust from a vehicle's exhaust system to the point where the exhaust gas enters the dilution tunnel shall be constructed of stainless steel according to the following specification:

1. Four-inch outside diameter single wall stainless steel tubing.
2. Tubing must be covered with fiberglass insulating material with protective covering.
3. Two (2) stainless steel marmon flange reducers from four-inch to three-inch with five (5) marmon flange three-inch elbows of various angles must be supplied.
4. One four-inch stainless steel "Y" tubing for dual exhaust must be supplied.

B. The steel tubing shall be designed to minimize heat loss of the exhaust gas between the point where it leaves the engine exhaust system and the point where it enters the dilution tunnel. The maximum length of the steel tubing shall be 20 feet. Insulation material must not contain asbestos and shall be capable of withstanding temperatures up to 300 °C. In addition, the insulation shall have a protective covering with fasteners that allow the cover and insulation to be easily removed and installed.

3.3 Primary and Secondary Dilution

A. A dilution air filter system with 99.95% efficiency must be supplied for the FFP System.

B. Primary Dilution tunnel

A dilution tunnel shall be used for primary dilution of engine exhaust. The dilution tunnel must be 10-inch diameter smooth stainless steel pipe-work. The configuration must permit development of turbulent flow and complete mixing of the exhaust and dilution air between the mixing orifice and the sampling probes. Turbulent flow must be achieved under all conditions.

1. The minimum length of the dilution tunnel is defined by the following:

   a) The probes for particulate samplers must be located at least 10 pipe diameters downstream of any flow disturbance.
   b) The sampling ports shall be located on the dilution tunnel so that the probes installed through these ports must be at least 2 pipe diameters upstream of any flow disturbance.

2. The dilution tunnel shall be mounted horizontally at a height of 8 feet on a structurally sound stand supported from the floor and walls. The dilution air boxes shall be mounted on the wall or on a stand. There shall be easy access and structural support for the heated particulate filter assemblies.

3. The exhaust inlet shall be centered as close as possible to the dynamometer in Cell #3. The exhaust inlet to the dilution tunnel must be parallel to the dilution tunnel flow, and directed downstream at the point where it is introduced into the dilution tunnel.

4. The dilution tunnel must be electrically earth bonded/grounded.

5. The dilution tunnel shall have three (3) spare sampling ports for installation of additional probes. The size and location of these ports shall have the same requirements as those for the particulate probes.

C. Secondary Dilution Tunnel

1. A secondary dilution tunnel shall be provided for each of the three Particulate Matter (PM) sampling units connected to the primary dilution tunnel.

2. A bypass of the secondary dilution tunnel shall be available for tests in which no additional dilution is needed.

D. Mixing Orifice Plate

A mixing orifice plate shall be fitted to promote mixing and development of a flat velocity profile. This shall be a "large hole" stainless steel device installed at a point where dilution air and exhaust meet at least 10 pipe diameters upstream of the sampling probes.

E: Sample Zone Temperature and Secondary Dilution

A resistance temperature detector or thermocouple and associated signal conditioning shall be used to monitor the dilute exhaust temperature in the particulate sample zone and at the particulate filter face throughout a test. The temperature data plus out-of-limit alarms should be provided and sent to the control unit. The temperature measurement accuracy shall be better than ±1.0 °F.

3.4 Particulate Samplers

A. Probes

1. Particulate sampling probes shall be installed facing upstream at or as near to the primary tunnel centerline as possible at least 10 tunnel diameters from the mixing orifice and at least 2 tunnel diameters from any flow disturbance downstream of them.

2. All probes must be as short as possible and free of sharp bends. All probes must be constructed of smooth, seamless, electro-polished, and passivated stainless steel pipe with minimum I.D. of 0.5 inches. The maximum length between the sample probe tip and the primary filter holder assembly shall be 40 inches.
3. The flow rate through the particulate probes must be maintained to a constant value within ±5 % of the set rate.

B. Particulate filter assemblies

1. There must be three sets of stainless steel particulate filter assemblies each comprised of the following:

   a) Three primary filter holders to suit 47 mm (1.85 in.) diameter filters (37 mm or 1.5 in. stain area).
   b) Connecting pipework.
   c) Labels (numbers and color).

2. All filter holders must have a positive seal (Teflon® O-ring or Silicon O-rings) against leakage with or without filter media installed. All filter holders shall be able to accommodate Teflon® and Quartz filters.

3. Each filter holder shall have its own flow path. In addition, one filter assembly shall allow for connection of polyurethane foam (PUF) cartridges downstream of the particulate filter holders.

C. Particulate sampler flow

1. All parts of the system must have sufficient capacity and resolution to accurately control the flow up to maximum filter face sample velocity. The flow through the particulate filters must be maintained within ±5% of the set point.

2. The flow rate must be monitored, recorded, displayed, and have out-of-limit alarms. This data shall be sent to the main control system. This data shall be corrected to standard conditions (1 atmosphere at 20 °C). Flow limits must exist within the sampling system software that indicates or triggers a flagged condition at the main control system when the particulate sampler flow is outside of these limits.

D. Volume measurement

The total volume of dilute gas sampled by the particulate sampler systems shall be measured. The accuracy shall be 1.0 % or better. The installation of volume measurement devices must not affect the flow control, and must be located sufficiently distant from the dilution tunnel so that the inlet gas temperature is maintain at a constant temperature (±5 °F). The following parameters shall be monitored, recorded, and displayed through the main control unit:

1. Out of temperature limit alarms.
2. Inlet gas temperature.
3. Integrated volume for each test phase.

E. Pumps

1. Particulate sample pumps shall be used to maintain stable flow to the system for all available flow rates from the flow control system. Any drop in pressure caused by the introduction of the gas meter calibration device shall also be considered.

2. The pumps and associated flow instrumentation must be sized to maintain flow rate for the various filter types and PUF cartridges. Pressure drop across a PUF cartridge is typically no more than 5 inches of water.

3. The pumps must be located sufficiently distant from the primary dilution tunnel so that the inlet gas temperature is maintained at a constant temperature within ±5 °F. The temperature must be monitored, recorded, displayed, and have out-of-limit alarms.

F. General

1. A particulate filter bypass must be provided to permit flow stabilization prior to testing.

2. All parts of the particulate sampler systems must be designed with no leaks.

3.5 Control System

A. The FFP system shall have its own control system. The control system must provide complete control of the FFP system and all its functions.

B. The FFP system shall provide a log of events and times when errors occur, and keep a time record of the equipment's age for servicing purposes. Menus must use the English language.

C. Flow control and measurement units shall be indicated and selectable in Standard Cubic Feet per Hour (SCFH), Standard Liters per Hour (SLH), Standard Cubic Feet per Minute (SCFM) or Standard Liters per Minute (SLM).

D. System configurations, operating parameters and quality assurance checks shall be stored in the main control system and on a compact disc that can be used to restore them in the event that it is needed. All modifications to the system configuration must be enabled via a multi-level password-protected system. In addition, system compact discs shall be provided to allow re-installation of the system software in case of a computer failure.

E. All operations and functions including performing test procedures and system utilities shall be performed via the control unit.

F. The control system shall be operable by a host computer (VTS) to automate test procedures and perform system functions.

G. The control system shall display dilute exhaust particulate sample volume (instantaneous volume flow rate and continuous total volume) and elapsed time for each phase.

H. The system clock time accuracy must be better than ± 0.01 sec.

3.6 VTS Interface

A. The VTS is a computer data acquisition/control system that automates test processes and gathers and stores vehicle emissions and relevant vehicle identification data in the high speed link (HSL).

B. The FFP control system shall use standard AK Protocol commands. All control and monitoring functionality available in the FFP control system shall be available to the

VTS host. The main FFP control unit shall be equipped with a Local Area Network card that can support both 10 Mb and 100 Mb communications. The provided main control unit shall have the capability to be controlled remotely from the VTS user interface computer via an Ethernet 10/100 BaseT-network connection. The electronic interface will use TCP/IP and the FFP control unit addressing scheme shall be remotely configurable so as to match the ARB's own IP addressing structure. All control commands and their associated response strings and a proposed command sequence must be provided to ARB in an interface document prior to the installation of the FFP.

C. The FFP control system shall be able to receive and process a time reference signal from the VTS in place of the FFP control system's own clock. The VTS time reference is an inter-range instrumentation group (IRIG) B signal (time coordination signal) generated by a GPS disciplined Brandywine board at one test cell and distributed to all other test cells on RG58 coax. In order to receive and process the IRIG B time reference signal, the FFP control system shall be equipped with a RG58 coax adapter, a Brandywine board (or equivalent), and interface software.

3.7 Electrical

A. The AC power requirements to operate the system shall be no more than 480 Volts AC.

B. All 120 VAC components shall be operated on surge and transient protected circuits separated from the remainder of the system.